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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,070	11/05/2003	Peter Heinrich	038724.52851US	6313

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT PAPER NUMBER

1762

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/701,070

Applicant(s)

HEINRICH ET AL.

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 13-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. The amendment of Dec. 16, 2004 has been received and entered.

#### *Election/Restrictions*

2. Applicant's election of Group I, claims 1-12, in the reply filed on Dec. 16, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

3. Claims 13-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on Dec. 16, 2004.

#### *Specification*

4. The title of the invention is now descriptive.

#### *Claim Rejections - 35 USC § 112*

5. The rejection of claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention is withdrawn due to the amendments of Dec. 16, 2004 to clarify these claims.

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 24 01 085 A1 (hereinafter '085) in view of Japan 02-217458 (hereinafter '458) and DE 30 42 921 A1 (hereinafter '921).

'085 teaches a method of coating cooking utensils by thermal spraying. Abstract. Plastic particles, such as PTFE, fluorocarbon or polyimide, are added with oxide particles, such as aluminum or titanium oxide, to a thermal spray jet. Abstract. The particles are sprayed to form a coating layer on the surface on the cooking utensil. Abstract. After the oxide/plastic layer is applied, a further additional plastic layer is applied. Abstract.

Claim 7: the coating layer can be formed by plasma spraying. Abstract.

Claim 10: the oxide particles can be aluminum oxide ( $Al_2O_3$ ). Abstract.

Claim 11: the plastic particles can be PTFE. Abstract.

'085 teaches all the features of these claims except (1) the position in the spray jet for adding the particles (claim 1, 8), (2) the coating layer formed in a single operation, (3) the increasing fraction of plastic material in the coating layer as the coating layer extends from the substrate surface, (4) the continuous or discontinuous increase in plastic (claims 2,3), (5) the percent of plastic (claims 4-6), (6) the angle of particle addition to the spray jet (claim 9).

'458 teaches a method of thermal spraying. Abstract. A mixture of ceramic and plastic material powders are to be applied to a surface. Abstract. The ceramic powder is added to the spray jet at a position near to the spray nozzle and the plastic powder is separately added to the spray jet at a position further from the spray nozzle and nearer to the substrate surface. Abstract and figures 1-2. The ceramic powder is added to the spraying jet at a location where the spraying jet has a higher thermal energy than the location where the plastic powder is added. Abstract and figures 1-2. As shown by figures 1-2, the plastic and ceramic particles can be added to the spraying jet at an angle of 90 degrees with the jet.

'921 teaches method of thermal spraying. Abstract. A plastic substrate is provided. Abstract. A mixture of plastic and high-melting substance, such as metallic oxides, is sprayed onto the surface of the plastic to form an intermediate coating. Abstract. The intermediate coating is applied in a graded fashion so that initially the coating is mostly plastic and as the coating extends away from the substrate towards the intermediate coating surface, it becomes

Art Unit: 1762

mostly high-melting substance. Abstract and figure 1. The grading can occur continuously.

Abstract. The grading can only occur abruptly, in layers. Abstract. Then a layer of the high-melting substance is provided. Abstract and figure 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '085 to use the spray injection method of '458 in order to provide a desirable thermal spray application method for the coating, because '085 teaches to thermal spray a coating to provide a mixture of oxide and plastic, and '458 teaches a desirable thermal spray method of injecting ceramic and plastic separately into the spray jet of a thermal spray gun. As to the amount of melting of the plastic particles, it would be a matter of routine experimentation to optimize the placement of the plastic injection into the spray, given the teaching of '458 of using different locations of injection. It would further have been obvious to modify '085 in view of '458 to use a graded coating application method as suggested by '921 in order to provide a desirable intermediate coating, because '085 teaches the desire to provide an intermediate coating between a substrate and a top layer of plastic material, where the intermediate layer is a mixture of oxides and plastic, and '921 teaches that when providing an intermediate layer between a plastic substrate and a high-melting substance (including oxides) top layer, it is desirable to grade the coating from mostly plastics at the substrate point to mostly high-melting substance at the interface between the intermediate layer and the high-melting substance layer. Although '921 teaches that the amount of high-melting substance increases as the intermediate coating extends away from the substrate, when using the coating of '085 in view of '458, it would be suggested to increase the plastic amount as the intermediate coating extends away from the

Art Unit: 1762

substrate, because in this case the top coat is plastic, not oxide. The coating would be suggested to be applied a single operation, given the teaching of '921 to provide a continuous grading. Furthermore, the increase in materials can be either continuously or abrupt, according to the teaching of '921. As to the percent of plastic in the spray jet, since '921 teaches going from mostly the first material to mostly the second material, it would have been inherent that the different claimed percentages would occur at least once during the coating process.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over '085 in view of '458 and '921 as applied to claims 1-10 and 12 above, and further in view of Metals Handbook (hereinafter MH).

'085 in view of '458 and '921 teaches all the features of these claims except spray jet gas.

However, MH teaches that conventional gases for plasma spray jets includes argon (an inert gas), hydrogen and helium. See page 363, column 1 and column 2.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '085 in view of '458 and '921 to use the gases of MH in order to provide a desirable thermal spray application method for the coating, because '085 in view of '458 and '921 teaches to thermal spray a coating to provide a mixture of oxide and plastic, and MH teaches that when plasma spraying, a form of thermal spraying, it is desirable to use argon, hydrogen and helium gases.

10. Payne et al (US 6503575) discusses graded coatings, and how they provide intermediate properties between coatings. See column 3, lines 10-20 and column 7, lines 35-65.

*Response to Arguments*

11. Applicant's arguments filed Dec. 16, 2004 have been fully considered but they are not persuasive.

Applicant argues that it is the final cited reference '921, that fails to provide the necessary teaching or motivation to complete the present invention, as it teaches the opposite of the present invention. In the present invention, according to applicant, the spray initially applied to the target surface is primarily high temperature oxide material, and then the fraction of plastic is increased until the upper layer of the coating has enough plastic to provide the desired high anti-adhesive property. In contrast, '921 teaches a coating with an outer surface primarily formed of a high melting material, and thus, according to applicant, even if the references were combined, the present invention's one-step, high plastic content outer surface would not result. Moreover, according to applicant, '921 teaches that its high temperature process is unsuitable for combination with over references to attempt to obtain the present invention. While the present invention first forms a strong high-melting base on the substrate, '921 teaches the opposite, that its high temperature material must be kept away from the underlying object's surface. Furthermore, the present invention builds upon its strong coating base with increasing plastic content in such a way as to avoid overheating of the plastic material as the coating is built, by decreasing the amount of high temperature material and introducing the plastic into the spray



downstream of the oxide as the layer builds. Applicant further noted that there is nothing in '921 or the other references to provide any suggestion or motivation to reverse the '921 process.

The Examiner has reviewed these arguments, however, the rejection stands. The primary reference, to '085, provides a metal substrate (the aluminum or alloy utensil), which would be a high-melting material, and then an intermediate mix of oxide/plastic is provided on the substrate, followed by a layer of plastic (low temperature layer) on the top. Thus, the primary reference provides the pattern of a high temperature substrate, a middle layer of high temperature material and low temperature material and a top layer of low temperature material. The secondary reference to '921 teaches providing a reverse combination of layers – low temperature plastic, middle layer of a mix of low temperature plastic and high temperature oxides/metals and a top layer of high temperature oxides/metals. However, a review of the reference by one of ordinary skill in the art of thermal spraying would understand that it indicates that when providing a graded middle layer between two layers of different material, it is desirable to provide the grading to progress so that at the start of the application of the grading layer, the layer is mostly the substrate/bottom layer material and becomes at the top, mostly the top layer material. In the art of the thermal spraying it is well known that grading in such a fashion prevents abrupt changes in stress, thermal expansion and elastic modulus between the applied layers, which can lead to failure of the coating. Since the primary reference indicates the desire to have a bottom layer of high temperature material and a top layer of low temperature material (the plastic) and to provide an intermediate layer of oxide/plastic, and '921 teaches that it is well known to provide graded coatings of oxide/plastic, it would have been understood by one of ordinary skill in the art that the

grading should be such that when done in a coating as taught by the primary reference to '085, the grading should be such that the plastics content increases as the coating thickness increases.

### *Information Disclosure Statement*

12. The information disclosure statement filed November 5, 1993 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

The Examiner notes the provision of a copy of German 7324829 U in the amendment of Dec. 16, 2004. However, the Nov. 5, 2003 PTO-1449 has not been amended to note the reference, as a copy of the reference was not filed on that date. As to applicant's arguments that the reference should have been provided to the USPTO by the International Search Authority because the reference was cited in the International Search Report, this is incorrect. The present case was a "continuation" of the international application PCT/EP02/04873, not a national stage application, and thus papers are not provided by the International Search Authority.

### *Conclusion*

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:30-4:00) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
KATHERINE BAREFORD  
PRIMARY EXAMINER